

**PROGRESS REPORT OF
WOLF POPULATION MONITORING
IN WISCONSIN
FOR THE PERIOD
OCTOBER 2002 - MARCH 2003**

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ABSTRACT

Gray wolf (*Canis lupus*) populations in Wisconsin have been monitored continuously since fall 1979. Gray wolves are listed as threatened by the state (1999) and federal government (April 2003) in Wisconsin. A minimum count over winter 2002-2003 consisted of 335-354 wolves in about 94 packs and 12 loners. A total of 328-347 wolves occurred outside of Indian reservations, thus this is the second year exceeding the state delisting goal of 250 wolves outside of Indian reservations, and approaching the state management goal of 350 wolves outside of Indian reservations. The state wolf population increased 2.4% from the adjusted count of 327 wolves in Wisconsin in 2002, and has increased at an average rate of 18% since 1985 when 15 wolves occurred in the state. Mean winter home range of 28 adult wolves was 45 square miles. Total occupied range of territorial wolves was 6040 square miles at a density of 1 wolf per 18 square miles. An estimated 92 to 129 pups survived to late winter for an average survival rate of 26%. The process for state delisting is planned for later in 2003, and the federal delisting process is expected to begin in early 2004.

INTRODUCTION

Wolves (*Canis lupus*) became extinct in Wisconsin in the late 1950's, following a bounty system that lasted from 1865 to 1957 (Thiel 1993). Elimination of bounties in Wisconsin and adjacent states, as well as endangered species designation allowed wolves to return to Wisconsin in the mid 1970's (Wydeven et al 1995). The state of Wisconsin listed the gray (timber) wolf as a state endangered species in 1975, and began a formal population monitoring program in 1979 (Wydeven et al 1995). Continuous annual monitoring has occurred in the state through winter 2002-2003. Intense population monitoring of wolves was considered an important management

strategy in the 1989 recovery plan (Wisconsin DNR 1989), and the 1999 state wolf management plan (Wisconsin DNR 1999).

Wolves were reclassified as a state threatened species on October 1, 1999. The U.S. Fish and Wildlife Service listed wolves as endangered in 1974, and reclassified wolves to threatened in Wisconsin on April 1, 2003. The federal government also announced its intent to soon begin the delisting process in the Eastern District Population Segment (DPS) including Wisconsin. A population of 100+ wolves in Wisconsin and Michigan for 5 or more years, and a stable population in Minnesota, are criteria for delisting for the Eastern DPS. The combined state populations have been above 100 for Wisconsin and Michigan since 1994, and currently are about 660 wolves. The federal delisting process for the Eastern DPS is expected to begin in early 2004, and could be completed in 2005.

The state delisting goal is a population of 250 wolves for one year outside of Indian reservations (Wisconsin DNR 1999). The wolf population has been close to the delisting level since 2000 (Wydeven et al 2001), but was not obviously above this goal until 2002 (Wydeven et al 2002). A population of 350 wolves outside of Indian reservations is the long term management goal for Wisconsin. Once the management goal is exceeded, and after federal delisting has occurred, pro-active controls by government trappers, and possible public harvest, can be considered.

The present report covers surveys conducted in Wisconsin from October 2002 through March 2003, but some survey information extends to mid September 2002 and mid April 2003. This report documents the mid and late winter wolf population in the state.

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METHODS

A territory mapping system (Fuller et al. 2002) was used to determine the Wisconsin Wolf population. Radio telemetry surveys were conducted as described by Mech (1974), and were used to determine territory distribution and wolf numbers for collared packs (Fuller and Snow 1988). Aerial locations were obtained on VHF radio collared wolves about once per week. Wolves were trapped from early May to early September, and attempts were made to obtain one collared wolf in about half the packs in the state (Wydeven et al. 1995, Wisconsin DNR 1999). Movements of the collared wolf were assumed to represent the general movements of the pack, and maximum count obtained from the air in mid or late winter was assumed to represent the whole pack. Wolves are rarely observed from the air except during winter and special efforts were made by pilots to visually observe wolves from December through March. Number of visual observations is reported for all collared wolves in relationship to total radio locations during the period of December through March. Home range area for the winter period (15 September-14 April) was calculated using the minimum convex polygon (Mohr 1949); isolated locations more than 5 kilometers from other points were considered extra territorial moves (Fuller 1989).

In addition to normal radio collars, a study was also underway by Ellen Heilhecker of University Wisconsin-Stevens Point studying pup movements and mortality factors. Pups were fitted with special ear pierced transmitters, and were monitored daily by ground radio telemetry until mid January when transmitters were expected to fail.

Snow tracking and sign surveys (Thiel and Welch 1981, Wydeven et al 1996) were used by DNR trackers to obtain counts of wolves in packs without collared wolves, or to supplement survey information for collared packs where few observations were made from the air. Presence of

raised leg urinations (RLU's), especially double raised leg urinations (urinations by both alpha male and female) were used to determine territorial marking and likelihood of breeding activity (Peters and Mech 1975). Estrus blood in the snow with the RLU's of alpha females further demonstrated likely breeding activity (Rothman and Mech 1979). Breeding status was surmised for some packs based on regular breeding history in the past, or large pack size, and in some cases was determined by observation of freshly excavated den sites in late winter. Surveys were conducted by driving snow covered roads within 1 to 3 days after new snow falls. During a given survey, as many snow covered roads as possible were followed within specific survey blocks (Wydeven et al 1996, Appendix 3). Roads were followed until wolf tracks were encountered and these tracks were back tracked and forward tracked to see where they left and joined the road. Separations of packs were determined by distance between observations, direction of movements, timing of observations, or presence of radio collared packs that were separated from track sets followed on the ground.

Attempts were made to conduct track surveys across most of the heavily forested areas of northern and central Wisconsin. Track surveys were especially focused on areas with historical wolf presence, recent observations of wolf reports, or areas of highly suitable wolf habitat (Mladenoff et al. 1995). Although emphasis was on conducting surveys in fairly recent snow, surveys in older snow did detect presence of wolves and RLU's, but vehicle activity, snowplowing and melting-freezing made precise counts difficult.

Along with DNR trackers, volunteer trackers were used to supplement snow track surveys. This was the eighth year for using volunteer trackers. Most heavily forested and mixed forest areas were subdivided into 132 survey blocks, averaging about 200 square miles each (Appendix 3, Wydeven et al. 1996). During the current year, volunteers examined 46 survey blocks and DNR trackers examined 71 blocks. A total of 90 survey blocks were tracked by DNR or volunteer trackers. Survey blocks not surveyed by snow tracking were blocks monitored by airplane radio telemetry, or blocks with little potential for having wolf packs. Volunteers were asked to conduct at least 3 "good" surveys per block, and track about 60-100 miles of road. All volunteers were required to attend weekend wolf ecology courses and day long track training programs.

Public and agency reports on wolf observations were also used for determining wolf abundance and distribution. Such surveys were included in the state count only if verified by experienced trackers, or photos or videos were available to verify wolf identification and counts. Track observations were used as part of the state wolf count only from experienced trackers, or from well documented observations (photos, plaster casts, scats collected, etc.).

Wolf packs along the borders were included in the Wisconsin wolf count if they appeared to have > 50% of their home range or territory. Thus some Minnesota and Michigan packs that overlap only slightly into Wisconsin, were not included as part of the state count.

Area of wolf occupancy was determined by summing up the area of packs in the state and multiplying by 1.37 to include 37% interstitial areas around the territories (Fuller et al. 1992). Current year's information on home range was used for collared packs, and values obtained within the last 3 years were used for previously collared packs. Statewide average values for

territorial adult wolves (45 miles ²) were used to estimate area for non-collared packs or packs not collared in the last 3 years.

Pup estimates in packs during winter were determined by change in numbers from previous surveys, knowledge of pup presence from summer howls and observations, and knowledge of pack composition from previously captured wolves. Pup survival was estimated by taking the mid point of the estimated number of pups in winter, and dividing by the number of breeding females the previous winter multiplied by 5.2 pups (the average number of implanted fetuses in 5 adult female wolves examined in Wisconsin).

RESULTS AND DISCUSSION

A total of at least 94 packs were detected in Wisconsin in winter 2002-2003 (Figure 1). Wolf packs were detected in 29 Wisconsin counties, including 20 counties in northern Wisconsin and 9 counties in central Wisconsin. Radio collared wolves occurred in at least 44 packs (47%) during the winter period.

Sixty-three radio collared wolves were monitored in 43 packs in Wisconsin in the winter period (Table 1). Wolf 369F was in the Siskiwit Lake pack, and after she died the pack was down to one animal. Twenty-eight wolves went off the air during the winter period and included signals lost on 15 wolves, 11 died, and 2 dispersed to Michigan. The 66 wolves monitored included 19 adult males, 25 adult females, 1 yearling male, 10 yearling females, 3 pup males and 8 pup females. High pup numbers were due to the special pup mortality study. By the end of winter only 3 pups (1 male, 2 females) remained on the air. Other wolves remaining on the air in late winter were 12 adult males, 17 adult females, 1 yearling male, and 5 yearling females.

Mean winter home range of 39 wolves located 20 or more times was 45 square miles (Table 2). Overall average for 32 wolves in northern Wisconsin was 48 square miles, and 31 square miles for 7 wolves in central Wisconsin. Mean territory size for 28 adults was 45 square miles, with a range of 16 square miles for 376F (Stella Lake) to 148 square miles for 336M (Bootjack Lake). The home range of the Bootjack Lake pack was probably exaggerated because wolf 336M seemed to be preparing to disperse. Translocated adult female 454F occupied a home range of only 14 square miles, but she also made some extensive moves, and was missing for portions of late winter and early spring. Overall home range areas during winter were similar to 2001-2002, and it appears that home range areas in central Wisconsin are slightly smaller than northern Wisconsin.

Wolf Pack and Lone Wolf Summaries

Wolf packs are illustrated in Figure 1, but lone wolves are only described in the text. The number in front of each pack listed below corresponds to numbers on Figure 1. Nicknames are listed in Appendix 1.

1. Pokegama River Pair - Douglas Co. Block 1: **2 wolves**; 2 wolves detected in 19.9 miles of track survey by DNR in Block 1; RLU's found but no estrus blood detected on 7 February 2003.

2. Truck Trail Pack - Douglas and Pine Co. Block 2: **3+ wolves**; 2 wolves detected on 2 surveys covering 43.9 miles by DNR, and 3 wolves detected by volunteer along 42.9 miles; adult male (268M) was observed two times with up to 3 other wolves, but his signal was lost after 13 January 2003; he had been on the air since 11 June 1997 as a yearling, and had been captured as a pup 28 August 1996; winter home range of 268M was 31 square miles (15 locations); RLU's were detected and breeding was suspected; possibly 1 pup survived from 2002.

3. North Empire Pack - Douglas Co. Block 3: **5 wolves**; 5 wolves detected in furbearer survey in early winter; a remote camera photographed 3 in late winter; 27 miles surveyed by DNR and 198.6 by volunteer in Block 3; sign not found, but breeding suspected; probably 2-3 pups survived from 2002.

4. South Empire Pack - Douglas Co. Block 3: **3 wolves**; no wolves detected on 27.4 miles of survey in this block by DNR, but volunteers detected up to 3 wolves along 198.6 miles of survey; adult male 297M occupied a 50 square mile home range (19 locations) prior to his death on 6 January 2003 (mange); he was last visually observed on 22 October 2003 with 3 other wolves; RLU's with blood detected 8 February 2003; possibly one pup survived from 2002.

5. Moose Lake Pack - Douglas Co. Block 4: **6 wolves**; 6 wolves detected by volunteers along 39.6 miles of 2 track surveys; wolf 434M (adult male) occupied an 11 square mile area (19 locations) in this pack prior to dispersal after 13 January 2003; he was not visually observed prior to dispersal; apparently 3-4 pups survived from 2002; breeding activity was not detected, but suspected.

6. Shoberg Lake Pack - Douglas Co. Block 6 & 8: **3-4 wolves**; DNR conducted 14.1 miles of survey in Block 6 and 30.0 miles in Block 8; a volunteer tracked 45.9 miles in Block 8; 2-4 wolves were detected including RLU's; Wolf 446F (adult female) dispersed from the Casey Creek Pack and remained in this pack area from 29 January to 1 April; she apparently did not join this pack; possibly one pup from 2002 survived in the Shoberg Lake Pack.

Wolf 446F - Douglas Co.: Wolf 446F had been a member of the Casey Creek Pack in northern Douglas County until late January when she moved south to the Shoberg Lake area. She remained in the Shoberg Lake area until early April when she dispersed further south into northeast Washburn County.

7. Lake Nebagamon Pack - Douglas Co. Block 6: **Five wolves**; Five wolves occurred in the area of Lake Nebagamon based on local reports and track observations by the local DNR biologist; wolf 440F (yearling female) initially thought to be part of the Shoberg Lake Pack, occupied a 32 square mile area (20 locations) north and west of the Brule River near Lake Nebagamon; wolf 440F was not visually observed in winter and dispersed westward in January; this pack apparently had 2 or 3 surviving pups from 2002; breeding status is unknown.

8. Casey Creek Pack - Douglas Co. Block 7: **Five wolves**; wolf 446F occupied a 6 square mile area (17 locations) in this pack until she dispersed after 21 January 2003; no visual observations were obtained from 446F in this pack; 5 wolves were reported in this area by the local DNR wildlife biologist; 35.3 miles of survey were conducted in this block by DNR; 2-3 pups apparently survived from 2002; breeding activity was again suspected.

9. Orienta Falls Pack - Douglas & Bayfield Co. Blocks 7 & 31: **two wolves**; 2 wolves were detected on 35.3 miles of survey in Block 7 in this pack area; other reports were also received of 2 wolves in this area; RLU's were found in February; apparently no pups survived from 2002.

10. Poplar River Pack - Douglas Co. Block 7: **Two wolves**; 2 wolves were detected in a new pack in northern Douglas County by wildlife biologist Greg Kessler and local trappers; RLU's and estrus blood were detected in February.

11. Bird Sanctuary Pack - Douglas Co Block 9: **Five wolves**; adult female 447F occupied a 35 square mile area (31 locations) over winter; 447F was visually observed on 4 of 17 radio locations with up to 4 other wolves; volunteers surveyed 22.0 miles in this block and DNR surveyed 14.7 miles; breeding activity was suspected; apparently 2-3 pups survived from 2002.

12. Crotte Creek Pack - Douglas Co. Block 9: **Two wolves**; 2 wolves were detected in 22 miles of survey by volunteers and 14.7 miles by DNR in this block; RLU's were detected; apparently no pups survived.

13. Riverside Pack - Burnett Co. Block 10 & 11: **Two wolves;** two wolves detected in area in 4.8 mile survey of Block 10 by DNR and 68.1 miles surveyed in Block 11; RLU's detected on 5 March 2003; no pups survived from 2002; may be new pack.

Markville Area - Burnett & Pine (MN) Co. Block 11: During a survey of the Chase Brook area 4 wolves were detected along the Minnesota border north of Markville; sign was not found far to the east and the pack was assumed to be mainly a Minnesota pack; the previous Chase Brook Pack in this area was probably eliminated through depredation control trapping in 2001 and 2002.

Moose Road Area - Douglas & Pine (MN) Co. Block 11: **One wolf;** Only one wolf was found in the area of the Moose Road Pack in 68.1 miles of survey; no RLU's were detected.

Stuntz Brook Pack - Washburn Co. Block 12 & 10: **One+ wolf;** only 1 wolf was detected in 35.3 miles of survey of Block 12 in this area; no evidence of breeding activity or territory marking were detected.

14. Crex Meadow Pack - Burnett & Pine(MN) Co. Block 13: **Three wolves;** adult male 388M occupied 85 square miles (32 locations) in Wisconsin and Minnesota; he was visually observed with up to 2 other wolves; 3 wolves were also detected along 53 miles surveyed by volunteers; RLU's were detected on 16 February; possibly one pup survived from 2002.

15. Sterling Barrens Pack - Burnett & Polk Co Block 14: **Three wolves;** the local wildlife biologist and other workers at Fish Creek Wildlife Area report tracks of 3 or more wolves in this area; breeding may have occurred and possibly a pup was produced and survived from 2002.

Spencer Lake - Burnett, Barron & Polk Co. Block 17: **One wolf;** one wolf was detected along 44.0 miles of survey in this block by DNR; no territory marking was detected.

16. Blue Hills - Barron & Rusk Co. Block 20: **Two wolves;** two wolves were detected along 49.9 miles surveyed by DNR; no wolves were detected along 164.5 miles surveyed by volunteers; no territory marking was detected in surveys; no pups apparently survived from 2002.

17. Tranus Lake Pack - Washburn Co. Block 22: **Two wolves;** two wolves were detected along 36.1 miles; RLU's were detected; no pups apparently survived; the alpha male of this pack was killed by other wolves in May 2002.

18. Chain Lake Pack - Washburn & Douglas Co. Block 23: **Five wolves;** wolf 291M (adult male) occupied 62 square miles (32 locations) in this territory; he was observed only 2 times by himself in 17 radio locations; 5 wolves were detected along 16.1 miles of survey by DNR including RLU's; apparently 2 or 3 pups survived from 2002.

Wolf 460F - Washburn & Burnett Counties: **One wolf;** female wolf 460F was translocated to southwest Vilas County on 1 November 2002 after depredation on a farm in Burnett County. Throughout winter she traveled through Vilas, Price, Rusk and Washburn counties. By late winter, she was back into southern Burnett County, but not near the farm.

19. Ghost Lake Pack - Bayfield & Sawyer Co Block 24: **Three wolves;** three to possibly 5 wolves were detected along 63.4 miles of surveys in this block by DNR and 40.5 miles by USFS; RLU's and estrus blood were detected 14 February 2003; the previous alpha female of this pack (241F) dispersed north to the Porcupine Lake area.

20. Smoky Hill Pack - Bayfield & Sawyer Co. Block 25 & 23: **Three wolves;** 3 wolves were detected in the Smoky Hill area along 33.3 miles in survey block 25; RLU's were detected; possibly 1 pup survived from 2002.

21. Bearsdale Pack - Bayfield Co. Block 25: **Four wolves;** the Smoky Hill Pack apparently split into 2 groups and this is the northern group; 4+ wolves were detected along 33.3 miles of survey; RLU's were detected; 1 or 2 pups apparently survived from 2002.

22. Moreland Lake - Bayfield & Douglas Co. Block 26: **Five wolves;** 5 wolves detected along 23.7 miles of survey; RLU's and estrus blood detected on 15 January 2003; 2-3 pups assumed to have survived from 2002.

South Island Lake Loner - Bayfield Co. Block 26 & 25: **One wolf;** a lone wolf was detected in western Bayfield County on 15 January and 21 January.

23. Rainbow Lake Pack - Bayfield Co. Block 27: **Four wolves;** 4 wolves were detected in the Rainbow Lake area along 58.8 miles of survey in this block by DNR; RLU's were detected; 2 pups probably survived from 2002.

24. Ino Swamp Pack - Bayfield Co. Block 27: **Five wolves;** 5 wolves were detected in the Ino Swamp area along 58.8 miles of survey in this block by DNR; although sign was not detected, breeding was suspected; 2-3 pups apparently survived from 2002.

25. Bibbon Swamp Pack - Bayfield Co. Block 28: **Eight wolves;** no wolves were detected along 13.6 miles surveyed by DNR, but a volunteer tracked 106 miles on 6 surveys and detected up to 8 wolves; RLU's and estrus blood were detected on 11 February and 22 February 2003; this pack apparently split from the Rainbow Lake pack; probably 4 or 5 are surviving pups from 2002.

26. Porcupine Lake Pack - Bayfield Co. Block 29: **Three wolves;** adult female 241F occupied a 70 square mile area (27 locations) and was observed with 1 other wolf in 2 of 16 radio locations; 3 wolves were detected in this pack along 13.6 miles surveyed by DNR; RLU's and estrus blood were detected on 24 January 2003; 42.8 miles were also surveyed in this area by a volunteer.

27. Moquah Pack - Bayfield Co. Block 30: **Three wolves;** wolf 431F (adult female) occupied a 59 square mile area (30 locations) and was visually observed 3 times with up to 2 other wolves out of 17 radio locations; a total of 10.3 miles of track surveys were conducted by DNR; no sign of territory marking was detected, but breeding was suspected; no pups apparently survived from 2002.

28. Flag River Pack - Bayfield Co. Block 31 & 32: **Four wolves;** adult male (438M) occupied 50 square miles (31 locations) and adult female (439F) occupied 52 square miles (30 locations); 438M was observed 2 times out of 17 radio locations including 1 observation with 439F; 439F was observed 2 times out of 16 radio locations including 1 observation with 438M; on 5 February both were observed with non collared wolves, thus a total of 4 wolves detected; the local wildlife biologist reported tracks of 3 observed in this area; volunteers conducted 78.4 miles of survey in Block 31, but most focused on the Orienta Pack in the western part of the block; breeding probably occurred although sign was not detected; possibly 1 or 2 pups survived from 2002.

29. Siskiwit Lake Pack - Bayfield Co. Blocks 32 & 33: **One wolf;** only 2 wolves were detected in this pack during most of the winter, but adult female 369F was killed by vehicle collision on 20 March 2003; she had occupied 38 square miles (28 locations); she was observed only once in December with one other wolf; this pack had suffered high losses from vehicle collisions and most pack members had severe mange.

30. Echo Valley Pack - Bayfield Co. Block 33: **Four wolves;** up to 4 wolves were detected along 27.4 miles of survey by DNR and 53.2 miles by volunteer; RLU's and estrus blood were detected on 13 February; probably 2 pups from 2002 survived in this pack..

31. Beaver Dam Lake Pack - Ashland Co. Block 34: **Two to three wolves;** 2 to 3 wolves were detected in the Brunswiler River area north of the Hellhole Creek Pack along 69.5 miles surveyed by DNR; RLU's were detected.

32. Hellhole Creek Pack - Ashland & Bayfield Co. Block 35 & 34: **Five wolves;** up to five wolves were detected along 86.6 miles surveyed by DNR and 127.4 miles by a volunteer; RLU's and estrus blood were detected on 11 January 2003; wolf 444F (adult female) occupied a home range of 51 square miles (31 locations) and was observed 4 times with up to 3 other wolves on 16 radio locations; apparently 2 or 3 pups survived from 2002.

33. Brush Creek Pack - Ashland Co. Block 36: **Seven wolves;** up to 7 wolves were detected in this pack area along 76.8 miles of survey by DNR; RLU's and estrus blood were detected on 11 January 2003; probably 4-5 pups survived from 2002.

34. Black Lake Pack - Ashland & Bayfield Co. Block 37: **Four to five wolves;** wolf 370F occupied 52 square miles (30 locations) and was observed only one time with one other wolf out of 16 radio locations; 4-5 wolves were detected along 38.8 miles of surveys by USFS; RLU's and estrus blood were detected on 21 January; probably 2 pups survived from 2002.

35. Round Lake Pair - Sawyer Co. Block 37 & 42: **Two wolves;** wolf 457F (adult male) caught at a depredation site in Burnett County in September and released into Vilas County on 7 October 2002; during winter, he roamed across Iron, Ashland, Bayfield and Sawyer Counties and settled into an area between Round and Moose Lake in mid February; on 19 February 2003, he was observed with another wolf in the Round Lake area in a 12 square mile area; it is unclear if the two have established a territory in this area.

36. Torch River Pack - Ashland Co. Blocks 38, 36 & 37: **Five to six wolves;** wolf 248M (adult male) occupied 55 square miles (30 locations) and was observed 2 times out of 16 radio locations with 3 other wolves; 32.8 miles of survey were conducted by DNR in Block 38, but mainly outside this territory; tracks of 5-6 wolves from this pack were detected in Block 36 on 12 March with RLU's; breeding probably occurred and 2-3 pups apparently survived from 2002.

37. Shanagolden Pack - Ashland Co. Blocks 38 & 40: **Three wolves;** 2-3 wolves were detected on track surveys in the Shanagolden area of blocks 38 (32.8 miles total) and 40 (79.6 miles total) by DNR; RLU's and estrus blood were detected on 16 January 2003; possibly 1 pup survived from 2002.

38. Hungry Run Pack - Ashland & Sawyer Co. Block 38 & 40: **Four to five wolves;** DNR track surveys in blocks 40 (79.6 miles) and 38 (32.8 miles) detected 4-5 wolves in the Hungry Run area; RLU's detected and breeding suspected; probably 1 to 3 pups survived from 2002.

39. Log Creek Pack - Ashland, Sawyer & Price Co. Block 38 & 40: **Four to five wolves;** DNR surveys covered 32.8 miles in Block 38 and 79.6 miles in 40 and 3 to 5 wolves were detected in the Log Creek Pack; RLU's were detected and breeding was suspected; probably 2-3 pups survived from 2002.

40. West Firelane Pack - Ashland & Iron Co. Blocks 39 & 60: **Two wolves;** wolf 036F occupied 36 square miles (30 locations) in the Bad River Indian Reservation and adjacent areas of Ashland and Iron Counties; she was observed 5 times out of 16 radio locations, with only 1 other wolf; breeding activity was detected by Tom Doolittle, tribal biologist; a yearling female was illegally shot in this pack in early November 2002.

41. Morrison Creek Pack - Ashland & Iron Co. Blocks 39 & 60: **Three wolves;** sign of three wolves was detected in this pack in the Bad River Reservation by the tribal biologist; breeding activity was not detected; possibly these wolves are part of the Little Girl Point Pack in Michigan.

42. Thornapple River Pack - Sawyer Co. Block 41 & 43: **Six wolves;** 89.9 miles were surveyed by DNR in block 41 and 6 wolves were detected in the Thornapple River area on 29 January; breeding sign was not detected, but breeding probably did occur; apparently 4 pups survived from 2002.

43. Price Creek Pack - Price & Sawyer Co. Block 41 & 44: **Three wolves;** wolf 249 F (yearling female) was caught by a coyote trapper on 25 October 2002, and was monitored until 10 December 2002 when she disappeared, apparently dispersing eastward; 249F was observed once by herself; in late November 2002 a member of this pack was shot illegally; 3 wolves were detected 2 times in the Price Creek area along 89.9 miles of DNR survey; breeding activity was not detected; possibly 1 pup survived in this pack.

Davis Lake Pack - Price Co. Block 41: No wolf activity was found in this area during the winter; possibly the group detected last year were members of another pack.

44. Eddy Creek Pack - Sawyer Co. Block 42: **Two wolves;** 2 wolves were detected along 62.5 miles of track surveys in this area; no sign of breeding was detected; the pack occurs in the Lac Courte Oreilles Indian Reservation.

45. Tupper Creek Pack - Sawyer Co. Block 43: **One or two wolves;** tracks of 1 or 2 wolves were found on the west side of Block 43 along 41.8 miles of DNR survey; RLU's were detected, but it was not clear if an intact breeding pair remained.

46. Haystack Corner Pack - Sawyer & Rusk Co. Block 43: **Five wolves;** during DNR survey of 41.8 miles in this block, tracks of 5 wolves were found in the southern part of the block; breeding sign was not found, but was suspected; apparently 2 or 3 pups survived from 2002; the pack killed a hound dog hunting coyotes on 5 February 2003.

47. Skinner Creek Pack - Price & Sawyer Co. Block 44: **Three wolves;** tracks of 3 wolves detected by 15.1 miles of survey by DNR and 83.8 miles of survey by volunteer; RLU and estrus blood found on 30 January 2003; possibly 1 pup survived from 2002.

48. Spring Creek Pair - Price Co. Block 43: **Two wolves;** tracks of two wolves were detected near the Spring Creek Wildlife Area by volunteers along 83.8 miles of surveys in this block; breeding activity was not detected; other agency persons also reported wolves in the area along Aspen Road near Spring Creek.

49. Kidrick Swamp Pack - Taylor Co. Block 47 & 46: **Four wolves;** tracks of 4 wolves were detected in the Kidrick Swamp area along 91.8 miles surveyed by DNR; breeding sign was not found, but was suspected; probably 1 or 2 pups survived from 2002; this pack has been responsible for depredation on dogs during the last 5 years.

50. Mondeaux Flowage - Taylor Co. Block 47: **Two wolves;** tracks of two wolves were detected around Mondeaux Flowage along 91.8 miles of survey; RLU's were detected and breeding was suspected; translocated wolf 441F seemed to join this pack in late September 2002, after release in northeast Price County 11 July 2002. Wolf 441F occupied a 37 square mile home range (15 locations) prior to her death from shooting prior to 2 December 2002.

51. Spirit Lake Pack - Taylor & Price Co. Blocks 48, 49 & 70: **Six wolves;** 3-6 wolves were detected by DNR along 58 miles in Block 48, 58 miles in Block 49, and 69.0 miles in Block 70; RLU's were detected and breeding was suspected; apparently 3-4 pups survived from 2002.

52. Bootjack Lake Pack - Price & Oneida Co. Blocks 51, 52 & 53: **Seven to eight wolves;** wolf 336M (adult male) occupied a winter home range of 148 square miles (24 locations), but he apparently dispersed in late winter (> 10 March 2003); wolf 336M was observed 1 out of 14 radio locations with 7 other wolves on 4 February 2003; 0 to 4 pups survived from 2002; DNR surveys in this area included Block 51, with 14.9 miles and Block 52 with 92.3 miles; volunteers surveyed 61.3 miles in Block 51; RLU's were found and breeding was again suspected.

Miles Lake Loner - Price, Iron & Vilas Co. Block 54: **One wolf;** one to six wolves were detected in this survey block by DNR along 173.1 miles of survey, but groups of 2 or more appeared to be packs from adjacent blocks, breeding activity not detected.

53. Murray's Landing - Iron Co. Block 55 & 54: **Four to six wolves;** 3 to 6 wolves were detected in this area through track surveys nearby, and observations collected by the local wildlife biologist; RLU's were detected and breeding was suspected; possibly 1 or 2 pups survived from 2002.

54. Hoffman Lake Pack - Price, Iron & Ashland Co. Block 55 & 54: **Five wolves;** wolf 459M occupied a 51 square mile area (21 locations) and was observed 2 times of 16 radio locations with up to 4 other wolves; wolf 459M appeared to have dispersed in late winter; apparently 1 or 2 pups survived from 2002; DNR conducted 12.4 miles of survey in Block 55 and volunteers surveyed 162.4 miles; RLU's and estrus blood were detected on 11 January 2003.

55. Eastside Firelane - Ashland & Iron Co. Block 56: **Three wolves;** tracks of three wolves were detected in this area by DNR wildlife biologist; no DNR or volunteer surveys were done in this area.

56. Augustine Lake Pack - Ashland & Iron Co. Block 57: **Five wolves;** tracks of 5 wolves were detected in this pack along 80.1 miles of survey by DNR; RLU's were detected and breeding was assumed; 1 to 3 pups probably survived from 2002.

57. Chippewa River Pack - Ashland & Iron Co. Block 58 & 56: **Six wolves;** adult male 351M occupied a 49 square mile area (29 locations); he was observed 4 times of 16 radio locations with up to 5 other wolves; volunteers surveyed 13.6 miles in this block; no wolf sign was found, but based on the size of this group and traditional use of this area, breeding probably occurred; probably 1 to 3 pups were produced in 2002.

58. Pine Lake Pack - Iron Co. Block 58: **Three wolves;** wolf 448F (yearling female) occupied a 65 square miles (30 locations); she was observed 3 times of 18 locations with two other wolves; breeding was suspected, but no pups apparently survived from last year.

59. O'Brien Lake Pack - Iron Co. Block 59 & 57: **Three wolves;** signs of up to 3 wolves were detected in Block 59 along 37.3 miles surveyed by DNR and 76.2 miles surveyed by volunteers; RLU's were detected and breeding probably occurred; possibly 1 pup survived from 2002.

Chaney Lake Pack - Iron & Gogebic Co., Block 61: observations of 4 or more wolves were detected in eastern Iron County and appeared to be members of this pack in Michigan in which 11 wolves were detected; the pack is considered a Michigan pack although it extends in Wisconsin.

Martha Lake Loner - Iron Co. Block 62: **One wolf;** a lone wolf was detected near Martha Lake, Iron County by the local wildlife biologist.

60. North Willow Pack - Oneida Co., Block 65: **Seven wolves;** wolf 437F (adult female) occurred in this pack in fall but died from drowning prior to 23 November (the animal appeared to be a wolf-dog hybrid); wolf 461F (female pup) occupied a home range of 32 square miles (21 locations); wolf 461F was seen 5 times of 17 radio locations with 6 other wolves; RLU's and estrus blood were detected on 29 January 2003 along 17.4 miles surveyed by DNR, and 101.6 miles were surveyed by volunteers; apparently 1 to 4 pups survived in this pack from 2002. Portions of this pack area were reported as the Scotchman Lake Pack, but these actually appear to be part of the North Willow Pack.

61. Little Rice River Pack - Oneida & Price Co., Block 67 & 51: **Six wolves;** adult male 355M occupied 54 square miles (30 locations); he was observed 4 times out of 17 radio locations with up to 5 other wolves; volunteers tracked 64.4 miles in Block 67 and 61.3 miles in Block 51; RLU's were detected and breeding was suspected; apparently 3 to 4 pups survived from 2002.

62. Somo River Pack - Lincoln & Oneida Co., Block 67 & 68: **Four wolves;** wolf 456F (yearling female) joined this pack in fall 2002, and occupied a winter home range of 85 square miles (23 locations); she was visually observed only 2 times out of 15 radio locations, and seen with 1 other wolf; 25.9 miles were surveyed by DNR and 59.3 miles surveyed by a volunteer; RLU's were detected and breeding suspected; possibly 1 pup survived from 2002.

63. Ranger Island Pack - Lincoln Co., Block 69: **Four wolves;** wolf 285F (adult female) occupied a home range of 22 square miles (22 locations); the wolf was observed 2 times during 11 radio locations with 4 other wolves; she went off the air after 17 March 2003 after being on the air since 24 August 1998; no track surveys were conducted, but breeding was suspected and apparently 1 or 2 pups survived from 2002.

64. Averill Creek Pack - Lincoln Co., Block 70: **Four to five wolves;** sign of 4-5 wolves were detected in this pack area in survey block 70 by DNR along 27.7 miles and 65.3 miles by volunteers; RLU's were detected and breeding was detected; possibly 1 or 2 pups survived from 2002; adult male 433M (suspected of being a wolf-dog hybrid) occupied a 21 square mile part of the territory in fall (14 locations); he was observed on 1 occasion by himself out of 3 radio locations in winter; the wolf dispersed after 9 December 2002, and was shot by a coyote hunter on 20 February 2003 in Marquette County, 109 miles to the south.

65. Harrison Hills Pack - Lincoln Co., Block 71 & 75: **Two wolves;** wolf 300F (adult female) occupied 17 square miles (12 locations) in fall before she was shot in November; her mate 246M occupied 18 square miles (16 locations) in the Harrison Hills, but also traveled extensively in southern Oneida and northwest Langlade County; DNR conducted 12.1 miles of survey in Block 71 and volunteers surveyed 13.4 miles in Block 71 and 10.2 miles in

Block 75; no pups from 2002 probably survived; RLU's and estrus blood were detected on 13 February, but by a subordinate female, possibly daughter of 246M.

Prairie River Pack - Langlade Co., Block 74: Wolf 395M occupied 31 square miles (20 locations and 724F occupied 20 square miles (21 locations) in this territory prior to their deaths from mange in January 2003; no other wolves appeared to occur in this pack, although this area was visited by wolf 246F after 395M and 724F died.

66. Pelican Lake Pack - Oneida Co., Block 76 & 74: **Two wolves;** wolf 332F (adult female) occupied 32 square miles (30 locations); in winter she was visually observed from the air 2 times of 17 radio locations and with one other wolf; breeding activity is not known and apparently no pups survived from 2002.

Bearskin Trail Loner - Oneida County, Block 67 & 78: **One wolf;** a lone wolf was detected along a trail in Block 78 and eastern portions of Block 67 by a volunteer tracker.

67. Stella Lake - Oneida Co., Block 77: **Three wolves;** wolf 376F (adult female) occupied a 16 square mile area (31 locations); she was observed 1 time with 2 other wolves; breeding status is unknown, but possibly the pack had 1 surviving pup from 2002.

68. Escanaba Lake - Vilas Co., Block 80 & 81: **Two wolves;** one wolf was detected along 46.2 miles of survey by DNR in Block 80; volunteer trackers found tracks of 2 or 3 wolves in southwest Block 81 along 108.5 miles surveyed; RLU's were detected in part; the sign could possibly be the Nineweb Lake Pack; apparently no pups survived from 2002.

69. Nineweb Lake - Vilas Co., Block 81: **Two wolves;** sign of 2 wolves were found in this pack area in 45.0 miles surveyed by DNR and 120.2 miles of survey by volunteers; RLU's were detected and breeding was suspected; no pups apparently survived from 2002.

70. Giant Pine Pack - Forest Co., Block 84, 85 & 95: **Three wolves;** wolf 458F (yearling female) joined wolves in the Giant Pine Pack area on 28 October; the winter home range for 458F was 87 square miles (29 locations); she was observed once with 1 other wolf out of 17 radio locations; 2-3 wolves were detected in the Giant Pine area in Blocks 84, 85 and 95; DNR surveyed 53.6 miles in Block 84, 71.2 miles in Block 85, and 47.8 miles in Block 95; a volunteer surveyed 49.9 miles in Block 84; RLU's were found and breeding may have occurred; no pups apparently survived from 2002.

71. Ada Lake Pair - Oconto & Langlade Co., Block 92: **Two wolves;** a pair apparently settled into areas west of Ada Lake reported by a local observer; no wolves were detected along 26.0 miles surveyed in the area by DNR.

Laona Loner - Forest Co., Block 93: **One wolf;** sign of 1 wolf was found in this block along 18.8 miles of survey by DNR; possibly this wolf is related to the pair near Ada Lake.

72. Johnson Springs Pair - Forest Co., Block 94: **Two wolves;** sign of 2 wolves were detected along 16.5 miles by DNR in Block 94; no scent marking was detected and the wolves may be a dispersing pair.

73. Alvin Creek Pair - Forest Co., Blocks 97, 96, 84 & 83: **Two wolves;** sign of 2 wolves were detected by DNR in the Alvin Creek area along 34.4 miles in Block 97 and 47.2 miles in Block 96; 2 or 3 wolves were also reported by volunteers in Block 97 and northeast Block 84; RLU's were detected and breeding may have occurred; a pack of 8 wolves occurred to the northwest in Michigan and the pair may have split from this group.

74. Morgan Lake Pair - Florence & Forest Co., Block 100: **two wolves;** wolves were not detected along 38.4 miles surveyed by DNR in this block, but 2 tracks of wolves were found by a DNR wildlife technician on other field work; breeding activity is not known.

75. Camp 6 Pair - Forest & Marinette Co., Block 101 & 102: **Two wolves;** sign of 2 wolves showing RLU's were detected along 31.1 miles in Block 101 and 27.5 miles in Block 102 by DNR; volunteers surveyed 154.7 miles in Block 102.

76. Butler Rock Pair - Oconto & Marinette Co., Block 104 & 103: **Two wolves;** wolf 432F (adult female) moved into the Butler Rock area in early December 2002; she occupied a 24 square mile area (19 locations) around Butler Rock and the Brazeau Swamp; wolf 432F was observed once in 20 radio locations, and with one other wolf; DNR surveys along 15.4 miles found RLU's and breeding was assumed to have occurred.

77. Dunbar Pack - Marinette Co., Block 107, 108 & 106: **Four or five wolves;** sign of 4 to 5 wolves were detected in Block 107 by volunteers, and at least 2 occurred in Block 106 to the south; surveys included 48.3 miles in Block 107 by DNR and 16.4 miles in Block 108; volunteers conducted 396.2 miles of survey in Block 106 and 148.7 miles in Block 107; RLU's were detected, and breeding apparently again occurred; apparently 2 or 3 pups survived from 2002.

78. Lake Noquebay Pair - Marinette Co., Block 113 & 114: **Two wolves;** volunteers detected 1 or 2 wolves along 11.0 miles surveyed in Block 113; the local wildlife biologist reported scattered observations in the area east of Lake Noquebay and south and to the west; breeding activity is not known in the area.

79. Oconto River Pack/Group - Oconto & Marinette Co., Blocks 131, 90 & 115: **Three wolves;** 7 wolves were released into the interior of Menominee County in August 2002 after depredations on cattle in Langlade County. In mid September, the pack moved eastward to bottomland areas of the Oconto River south of Suring. Members of the pack declined over fall and winter. Adult male 453M died from a vehicle collision on 17 October 2002. Female pup 443F died from a shooting on 7 January 2003. Adult female 454F left the pack after 4 February 2003, but returned in late April; wolf 435F (female pup) dispersed southward into eastern Shawano County after 13 February, and her signal was lost thereafter. Wolf 450F (female pup) dispersed west across the Menominee Indian Reservation after 17 March 2003, before her signal was lost. Thus, in late winter, only 2 pups remained, but the adult female was roaming about somewhere. All three wolves are radio collared, thus radio telemetry monitoring will continue as long as wolves remain in this area.

80. Long Lake Pair - Rusk Co., Block 126: **Two wolves;** wolf 393F (yearling female) occupied a 12 square mile area (30 locations) southwest of Ladysmith; wolf 393F was observed 3 times with one other wolf; possibly breeding occurred, but no track surveys were conducted in the area; wolf 393F was removed from a coyote trap in late November 2002.

Door Co. Block 132: Reports have been received of one or more loners in Door County over the last year, but no wolves were verified in the county over winter. Possibly wolves from Michigan cross into Door County from the Garden Peninsula of Michigan to the north on the ice of Green Bay in winter.

81. Eau Claire River Pair - Eau Claire & Clark Co., Block 117: **Two wolves;** sign of 2 wolves were detected near the Eau Claire River along 95.8 miles of survey by volunteers; no RLU's were detected.

82. Iron Run Pack - Clark Co., Block 117 & 118: **Four wolves;** wolf 309F occupied a 17 square mile (20 locations) area; the wolf was observed once out of 8 radio locations and included 3 other wolves; volunteers conducted 216.1 miles of survey in Block 118, and breeding activity was not detected; apparently 2 pups survived from 2002.

83. Wedges Creek Pair - Clark Co., Block 118: **Two wolves;** volunteer track surveys detected a new group of wolves west of Neillsville and mostly south of U.S. Highway 10; breeding activity was not detected.

84. Noch Hanai Pack - Jackson Co., Block 119: **Two wolves;** DNR biologists estimated 2 wolves continue to exist in this pack based on observation reports; one wolf was detected on a 17.1 mile survey by Ho Chunk trackers.

85. Wildcat Mound - Jackson Co., Block 120: **Four wolves;** five radio tagged wolves occurred in this pack in early fall; male pup 409M and female pup 410F remained on the air until 15 January and occupied 7 and 11 square miles respectively; adult male 420M disappeared after 7 October 2002; signal was lost of adult female 421F after 11 October 2002; wolf 429F remained on the air throughout winter, but her home range of 50 square miles (19 locations) was somewhat north of the Wildcat Mound territory; apparently at least 2 pups survived from 2002; volunteers and Ho Chunk trackers surveyed 109.0 miles and detected RLU's suggesting breeding activity.

86. Bear Bluff Pack - Jackson, Juneau & Wood Co., Block 121: **Five to six wolves;** five radio tagged wolves occurred in this pack during early fall; yearling male 338M dispersed to the southeast after 9 December 2002; wolf pups 406F 407F and 408M went off the air after 15 January and had occupied home range areas of 8 to 10 square miles (12-17 locations); yearling female 426F occupied 35 square miles (20 locations) in the territory; wolf 426F was not observed in winter; 5-6 wolves were detected in this pack on 100.5 miles of track survey by volunteers in this block; RLU's were found and breeding was suspected; apparently 3 pups survived from 2002.

87. South Bluff Pack - Wood & Juneau Co., Block 121: **Two wolves;** sign of 2 wolves were found near South Bluff and Sandhill Wildlife Area along 100.5 miles surveyed in Block 121 by volunteers; RLU's were detected and possibly breeding occurred; no pups were apparently produced in 2002; the lone wolf (adult male) in the Sandhill Wildlife Area was not found this winter.

88. Dead Creek Pack - Jackson, Juneau & Monroe Co., Blocks 121 & 122: **Two to four wolves;** a local volunteer found tracks of 2 to 4 wolves in this pack; breeding status was not known.

89. Rattail Pack - Juneau Co., Blocks 122 & 125: **Two wolves;** adult female 340F occupied 34 square miles (21 locations) in winter, mostly east of the Necedah National Wildlife Refuge; no visuals were made during winter; wolf 338M appeared to join this pack and possibly became mate to 340F; no pups apparently survived from 2002.

90. Suk Cerney Pack - Juneau Co., Block 122: **Two wolves;** wolf 442M (adult male) occupied about 23 square miles in southern Necedah National Wildlife Refuge (21 locations); wolf 427F (yearling female) dispersed from this pack after 13 November 2002 and was found dead in southern Marathon County on 16 February 2003 due to mange and heartworm; wolf 442M and another wolf were apparently displaced east of Necedah Wildlife Refuge by the new Silo Pack.

91. Silo Pack - Juneau Co., Block 122: **Five wolves;** volunteers followed tracks of a new pack that invaded the southern portions of the Necedah National Wildlife Refuge in November 2002; between 11 November and 7 March, tracks of the new pack were detected 9 times with 3 to 7 wolves; RLU's and estrus blood were detected on 5 January 2003; possibly 2 or 3 of the wolves were surviving pups from 2002.

92. Fort McCoy Pack - Monroe Co., Block 123: **Five wolves;** adult female 465F was caught in a coyote trap on Fort McCoy 13 December 2002; the wolf seemed to roam across the military base and sign was detected 7 times with 4-5 seen or sign detected; apparently 3 pups survived from 2002; RLU's were detected and breeding was again assumed.

93. Seneca Group - Wood Co., Block 124: **Two wolves;** wolves 341F (adult female) and 343M (adult male) had occupied this territory as a pair, but separated in winter; female 341F occupied a winter home range of 38 square miles (21 locations); adult male occupied 17 square miles (20 locations) until 5 February, after which he dispersed; a new wolf perhaps joined 341F; neither collared wolves were observed in winter.

94. Colburn Pack - Adams Co., Block 127: **Two wolves;** sign of 1 wolf was detected along 15 miles of survey by volunteers; a DNR biologist detected tracks of 2 wolves in the area 17 March 2003; it was not determined if the wolves were breeding.

Buena Vista loner - Wood & Adams Co.: **One wolf;** a single wolf was detected by UWSP graduate student and DNR biologist in the Buena Vista area.

95. Mead Wildlife Area - Wood, Portage & Marathon Co., Block 133: **Two wolves;** a volunteer tracker detected 2 wolves on the Mead Wildlife Area over winter; personnel from the wildlife area also detected tracks during winter; possible breeding may have occurred; wolf 427F was found dead north of the wildlife area on 16 February 2003, and 343M died on the east side of the wildlife area on 22 April 2003.

Dispersing and Translocated Wolves

Wolf 246M: Adult male was released into Forest County on 27 May 1998 after depredation on a farm in Burnett County. He was lost until 28 October 2002 when he was discovered in the Harrison Hills pack area of northeast Lincoln County and 42 miles southeast of the release site. He apparently had become mate to 300F, alpha female of

the pack. He may have been in this area for several years. With the death of his mate in November 2002, wolf 246M began roaming in areas of Pelican Lake and Prairie River packs, up to 12 miles to the east. He continued to visit portions of the Harrison Hills area, but it appears he may abandon the area.

Wolf 249F: Yearling female was caught in the Price Creek Pack of Price County in a coyote trap on 24 October 2002. She remained in the Price Creek area for the next month and a half. On 10 December 2002, 249F was located 6 miles east of her home range, and disappeared thereafter. It is assumed she dispersed out of range.

Wolf 338M: Yearling male was caught in the Bear Bluff Pack of Jackson County as a pup on 28 July 2001. On 31 October 2002 he visited areas west of the Necedah National Wildlife Refuge about 13 miles to the southeast. For the next month and a half, he traveled back and forth from the Necedah packs at least 2 times, and his last location in his home territory was 9 December 2002. By 27 December 2002, he seemed to have joined female 340F of the Rattail Pack, 7 miles to the east.

Wolf 343M: Adult male was caught on 12 June 2001, and in winter 2001-2002, seemed to establish a territory in Seneca Township west of Wisconsin Rapids in southwest Wood County with 341F. In winter 2002-2003, the two separated from each other and only a small portion of their home ranges overlapped. On 5 March 2003, 343M moved 22 miles to northwest Waushara County, and his signal was lost after that. Wolf 343M was killed by a vehicle collision in the northwest corner of Portage County on 22 April 2003, 22 miles to the north.

Wolf 427F: Yearling female was caught in the Suk Cerney Pack in Juneau County on 6 July 2002. She dispersed from this pack after 13 November 2002, and her signal was lost. The wolf appeared dead in southern Marathon County, 55 miles to the north on 16 February 2003; she apparently died from mange and heartworm.

Wolf 429F: Adult female was caught on 3 June 2002 in the Wildcat Mound Pack of central Jackson County. In winter 2002-2003, wolf 429F straddled highway 54, and included areas north of the highway, north of the pack area. She may gradually be shifting her territory to the north.

Wolf 432F: Yearling female was removed from a farm in Burnett County and was released in northeast Price County on 25 July 2002. After roaming northeast Price County, the wolf gradually moved to the southeast through Lincoln County, Marathon County, probably Langlade County, Menominee County and Oconto County. She eventually settled into the Butler Rock/Brazeau Swamp area of northeast Oconto and western Marinette County after 4 December 2002. She apparently met a male and established a territory in the area. The new pack area was about 100 miles ESE of the release site, and about 200 miles from the farm where depredation had occurred.

Wolf 433M: Adult male was captured on 5 June 2002 in the Averill Creek Pack of western Lincoln County. Because of his unusually long ears (15 cm), 433M was suspected of being a wolf-dog hybrid. Wolf 433M roamed the general area of the Averill Creek Pack from 5 June 2002 until 9 December 2002. He was not visually observed, and therefore it could not be determined if he actually was with the pack. After 9 December 2002, he disappeared. On 20 February 2003 wolf 433M was shot by a coyote hunter in southwest Marquette County, 109 miles to the south.

Wolf 434M: Adult male was captured in the Moose Lake Pack of western Douglas County on 29 May 2002. He remained in the Moose Lake territory until 6 January 2003, when he dispersed to the west into Pine County, Minnesota. By mid April, he had moved 34 miles to the southwest into Pine County Minnesota.

Wolf 440F: Yearling female was captured on 8 June 2002 in the Lake Nebagamon Pack of Douglas County. She was last detected in this pack on 6 January 2003, and on 13 January 2003 was 26 miles to the west on the Wisconsin/Minnesota border. Her signal was lost thereafter.

Wolf 441F: Yearling female was caught on a farm in Burnett County, and was released on 11 July 2002 in northeast Price County. She initially traveled extensively through Price County before moving southward. By 17 September 2002 she had settled into the Mondeaux Flowage, probably with two other wolves. She was shot to death in this territory prior to 2 December 2002. Her death site was about 52 miles south of the release site and 105 miles southeast of the farm where she had caused depredation.

Wolf 442M: Adult male was captured in the Suk Cerney Pack of Juneau County on 6 July 2002. He remained in the territory until late fall 2002, when he started visiting areas east of highway 80, 4 to 5 miles east of the territory center. By the end of 2002, it appeared that 442M and the Suk Cerney Pack was displaced by a new pack. He remained east of highway 80 in 2003, and was last detected on 5 March 2003, 6 miles east of the former center of the Suk Cerney territory.

Wolf 446F: Adult female was captured in the Casey Creek Pack of northern Douglas County on 13 June 2002. After 23 December 2002, 446F moved southward. Between 30 December 2002 and 10 March 2003, she occupied an area along Highway A in the Shoberg Lake area, and about 12 miles to the south. After 10 March 2003, 446F moved further south, and by 7 April she was in northeast Washburn County about 32 miles south of the original pack. Her last location may be in the Chain Lake or Tranus Lake Pack, but she may not have stopped traveling.

Wolf 456F: Yearling female was released in southwest Vilas County on 25 July 2002 after removal from a farm in northern Burnett County. She moved about extensively in Price, Oneida and Lincoln Counties, but by early October 2002, she started spending time in the Somo River Pack area in northwest Lincoln County and 29 miles south of the release site. Wolf 456F seemed to join the Somo River Pack, but she continued to roam about in surrounding counties. By mid January, she seemed to be fully established in this pack.

Wolf 457: Adult male was released in southwest Vilas County on 7 October 2002 after capture on a farm in northern Burnett County. Wolf 457M traveled to the northwest passing through Iron, Ashland and Bayfield Counties, as far north as the outskirts of Ashland. Eventually the wolf settled in northern Sawyer County, north of the Chippewa Flowage and east of Round Lake. He settled into the Round Lake area with another wolf on 19 February 2003. The new home for 457M was 59 miles west of his release site and the location was about 53 miles east of the farm where depredation had occurred.

Wolf 458F: Yearling female was removed from a farm in northern Burnett County and was released into southwest Vilas County on 7 October 2002. By October 2002, 458F had settled into the Giant Pine Pack/Headwaters Wilderness Area of northern Nicolet National Forest in Forest County. She spent the remainder of the winter in northern Forest County with one or two other wolves. The area settled was about 53 miles east of her release site, and about 166 miles from the farm where she had caused depredation.

Wolf 460F: Adult female was released in southwest Vilas County on 1 November 2002, after capture from a farm in northern Burnett County. Wolf 460F spent most of the winter in and around the release site and gradually moved southwest across Price County. In late winter, she moved more rapidly through Rusk County, and by 8 April had moved into southeast Washburn County. She had moved 88 miles from her release site, and Wolf 460F was 41 miles southeast of the farm where she had caused depredation. It did not appear that 460F had completed her travels.

Wolf 435F: Female wolf pup was one of 5 pups and 2 adults released into the Menominee Indian Reservation on 25 August 2002. In mid September the pack shifted its territory center from Menominee County to bottom lands along the Oconto River in Oconto County about 12 miles to the southeast. The pack remained in this area throughout the winter. The alpha male of the pack (453M) was killed by vehicle collision on 17 October 2002. On 7 January 2003, pup 443F was shot in this pack. Adult female 454F disappeared after 4 February (but returned in late April). Wolf 435F moved to the south in early February and on 13 February was in eastern Shawano County, 12 miles to the south. The signal was lost after this date.

Wolf 450F: Wolf female pup was another member of the Oconto River Pack discussed above. On 17 March 2003, 450F traveled 7.5 miles to the west into the Menominee Reservation, but disappeared after that location. A male (449M) and a female (452F) pup remained in the Oconto River area for the remainder of the winter. In late April, female 454F returned to the last two pups.

Wolf Telemetry Summary

DNR pilots detected a total of 129 different wolves while locating radio collared wolves in the state (Table 3). Pilot observations thus account for 39% of wolves counted in the state (335 wolves). Pilot detection rate included 35% of wolves in Wisconsin in 2002. Individual wolves were visually observed only 11% of the radio locations; this is probably the lowest rate ever recorded for Wisconsin. Last year wolves were observed 32% of the time. Low observation rates were probably due to poor snow cover, and restricted flying time due to budget concerns. Average size of 27 packs observed by pilots was 3.5 wolves, and ranged from 1 (only 1 member of pack observed from the air) in the Chain Lake Pack to 8 in the Bootjack Lake Pack. These counts of packs were probably minimum due to poor overall observation rates. Normally, pilot observations represents the most precise counts of packs, but due to poor observation rates we had to rely on track observations for more accurate estimates of pack size for many of these packs.

Wolf Mortality and Disease

Twenty-eight wolves were found dead in the state during the winter study period, including 11 collared wolves that were being actively monitored (Table 4). Two of the collared wolves appeared to possibly be wolf-dog hybrids (437F, 433M), but were included as part of regular mortality because they did seem to spend most of their time within home range areas of known packs. Overall mortality included 11 shootings (39%), 9 vehicle collisions (32%), 6 died mainly to mange (21%), 1 killed by other wolf (4%), and 1 drowned (4%). Cause of death among just the radio collared wolves included 4 shootings (36%), 2 vehicle collisions (18%), 4 mange (36%), and 1 drowned (9%). Although sample size is low, mortality factors among radio collared wolves are probably more indicative of rates across the whole wolf population, especially yearlings and adults. The overall sample included 71% human caused mortality, but the radio collared wolves included 54% human caused deaths. The overall sample over-represents vehicle collisions, but under-represents mange. Rate of losses due to shooting was similar for the overall sample and among radio collared wolves.

Mange apparently continues to be an important mortality factor, causing 1/3 of mortalities among collared wolves. One of the collared wolves killed by a vehicle also had severe mange, which may have reduced alertness, causing the wolf to be more vulnerable to vehicle collision. If this wolf had been included as a mange loss, then 45% of collared wolves dying would have been due to mange. Thirty percent of packs that may have produced pups in 2002 had no surviving pups. Mange may have contributed to some of these pup losses.

Wolf Depredation on Domestic Animals

Nine cases of wolf depredation on domestic animals occurred during the period of October 2002 through March 2003 (Table 5). Depredations included 3 dogs killed in 3 separate incidents by 3 different packs, 1 dog injured by the Murray's Landing Pack, 7 calves killed at 2 farms by 2 or more packs, 7 sheep killed (20 missing) at 1 farm, 1 foal killed at 1 farm, and 1 deer killed at a

deer farm. Trapping by USDA-Wildlife Services was conducted at 3 farms and 1 wolf was captured at a farm in Burnett County that had ongoing wolf depredation since June.

Four calves were killed on the farm in Burnett County in October and November, totaling 27 calves and one cow for 2002. USDA-Wildlife Services trapped 9 wolves off this farm that were given to DNR for translocation to other portions of the state. It appeared that 2 or more packs and perhaps loners were involved in depredation on this farm because the 9 wolves were all yearlings and adults, and included only one male. Control trapping in 2001 may have eliminated the resident pack, and the farm may have become the junction between 2 or 3 packs. Movements of translocated wolves are discussed under "Dispersing and Translocated Wolves".

A farm west of Ashland in Bayfield County had 3 calves killed in mid winter. The Moquah Pack was assumed responsible. The same farm had also lost 3 calves in 2001. Defenders of Wildlife purchased 2 donkey's for the farm.

Wolf depredation on sheep occurred for the first time since the early 1990's on a farm near Port Wing. The Flag River Pack apparently was involved in this depredation. Seven sheep deaths were verified as wolf kills, but there was strong circumstantial evidence that all or most of 20 missing sheep were also caused by wolves. The Defenders of Wildlife reimbursed this farm for purchase of a guard dog.

With federal wolf reclassification to threatened status on April 1, 2003, translocations of problem wolves will rarely be used in the future.

The Pelican Lake pack killed one hound during the bobcat hunting season. This same pack killed 2 dogs during the previous bobcat hunting season.

Reported Wolf Observations

All reports of wolf observations received by the wolf program were recorded and catalogued. Reports were classified as "probable", "possible" or "not likely" depending upon supporting information or corroborating evidence. Between October 2002 and March 2003, 235 reports were received of "probable" or "possible" wolf observations (Table 6). This is higher than the report of 188 observations in 2001-2002, or 109 reports in 2000-2001.

Wolf reports were received from 37 Wisconsin counties (Table 6, Figure 2)), but highest rates were for counties with known breeding packs. Counties with highest report rates were Douglas (32), Bayfield (24), Iron (20), Ashland (17) and Price (17) counties. Observation reports illustrate the extent that wolves may be roaming about the state, and illustrate areas where wolves were most abundant (Figure 2). Information on wolf mortality (Table 4) shows that dispersing wolves are commonly traveling as far south as Marquette. Although these reports do support the expansion and increase in the state wolf population, some of these reports may still represent coyotes, dogs or wolf-dog hybrids misidentified as wolf. Probable wolf-dog hybrids lived with 2 packs in northern Wisconsin, but one drowned and the other dispersed. The probable wolf-dog hybrid from western Lincoln County dispersed 109 miles south to Marquette County, where he was shot by a coyote hunter.

Volunteer Track Surveys

Surveys were returned for 46 survey blocks (56%) of 82 assigned blocks. Between DNR and volunteer trackers, a total of 90 blocks of a potential 132 blocks were examined by snow track surveys (Table 7). Surveys emphasized blocks with historical wolf packs, areas where wolves were reported, or areas of suitable wolf habitat for wolf packs (Mladenoff et al. 1995). Rate of returns on survey blocks was similar to previous years: 2002 (64%), 2001 (56%), 2000 (61%), and 1999 (65%). Lower return rates for 2003 may have been partially due to poor tracking conditions during much of the winter. Volunteers detected 137 to 147 wolves along 3784.8 miles of survey, and DNR trackers detected 203-221 wolves along 2869.7 miles of survey. Volunteers conducted, on average, 4.3 surveys, 82.3 miles and 15.4 hours per block surveyed.

Twenty-seven survey blocks were examined by both DNR and volunteer trackers. DNR detected 62-68 wolves and volunteers detected 83-84 wolves. Neither found wolves in 4 blocks, DNR found fewer wolves in 10 blocks, DNR found more wolves in 7 blocks, and both detected the same number in 3 blocks. In the past, generally DNR found more wolves in the same areas, but some blocks received only minimum coverage by DNR and were more thoroughly surveyed by volunteers. Use of volunteers expanded coverage and opportunity to detect wolves in Wisconsin.

Statewide Wolf Count

The Wisconsin wolf population estimated in mid or late winter 2003 was 335 to 353 wolves in 94 groups or packs, and 12 loners (Table 8). This count is the minimum estimation of wolves in the state in late winter. Because of poorer tracking conditions and lower observation rates, the population count is perhaps a little more conservative than other recent years. More reliance was used this year on tracking results from volunteers, and public observations of wolves (Table 8). Some of the lone wolves were relics of previous packs, and some may reform as packs.

The adjusted late winter count for 2002 was 327 to 343. Four wolves were added to the late winter count, because 2 pair were detected in summer 2002 that probably had established by late winter 2002 (Rib River and Deerbrook packs). It appears that the wolf population increased by only 2.4% in 2003. The average rate of increase has been about 18% annually since 1985 (Figure 3).

A total of 328 to 346 wolves occurred outside Indian reservations in 2003. The adjusted count for 2002 was 313 to 329 wolves outside of Indian reservations. Therefore, the state wolf population has exceeded the state delisting goal of 250 wolves outside of Indian reservations for 2 years in a row, and the state delisting process will begin later this year. The Wisconsin wolf population is also approaching the state management goal of 350 wolves outside of Indian reservations, but population controls (pro-active government trapping, private landowner controls, or public harvest) will not be possible until federal delisting occurs, possibly sometime in 2005.

An estimated 92 to 129 pups survived to mid or late winter 2003. Using the midpoint of 110 pups and assuming 80 potential breeding pairs in 2002, estimated pup survival was 26% statewide. Pup survival seemed higher in northern Wisconsin (28%) compared to central Wisconsin (19%). A total of 27 packs (30%) had no pups survive to late winter, but 8 of 13 packs in central Wisconsin had "0" pup survival. Mange may be affecting pup survival, and seems most severe in central Wisconsin where sarcoptic mange was first detected in fall 2000.

The area of occupied wolf territories, including all 94 packs and loners in Miles Lake, Moose Road, Siskiwit Lake and Stuntz Brooks where complete packs occurred recently, was estimated at 4409 square miles. Allowing for 37% interstitial areas (Fuller et al. 1992), total area covered by wolf packs and territorial wolves was 6040 square miles. Therefore, 328 to 346 wolves occurred at densities of 1 wolf per 17.5 to 18.4 square miles. Estimated occupied wolf range in northern Wisconsin was 5200 square miles where wolves existed at one wolf per 17.9 square miles, and 840 square miles at densities of 1 wolf per 19.5 square miles in central Wisconsin. Despite the fact that the wolf count for 2003 only increased slightly, the area occupied by territorial wolves increased by 20% from 2002.

In general, it appears that the wolf population increased only slightly in 2003, but areas occupied by wolves seemed to have expanded. The lack of population increase may be partially due to poorer tracking conditions, and low aerial observation rates, but there also was evidence that mortality from mange was fairly high, and effects could have been more severe on pup survival. Estimated pup survival seemed down from recent years, and was especially low in the central forest. It is apparent that the Wisconsin wolf population has exceeded the state delisting goal of 250 wolves outside of Indian reservations, and it appears to be very close to the state management goal of 350 wolves outside of Indian reservations. The state delisting process should begin soon.

PLANS FOR NEXT SEASON

Live trapping of wolves will be done from early May until early September, and additional wolves will be radio collared. Aerial radio tracking will be conducted on these and existing collared wolves on a weekly basis. The UWSP pup study will continue, and additional pups will be captured in July through September, and will have ear piercing transmitters fitted on them. These pups will be monitored intensely to mid January 2004. A study by Central Michigan University will begin to examine the use of shock collars for reducing depredation of wolves on domestic animals. USDA-Wildlife Services will investigate possible wolf depredation, provide recommendations to landowners, and attempt to trap and euthanize problem wolves. The National Wildlife Health Center in Madison will continue investigating mortality factors in Wisconsin wolves. The state process to delist wolves will begin in summer 2003 and should be completed by early 2004.

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Note: This report is a preliminary report and should not be construed as a finalized publication. Some of the numbers of pack sizes, composition, population figures, and other information may change, as more data becomes available. Persons wishing to cite figures within the report should consult the author.